

Serial No. 10/622,467

Docket No. HI-0169

Amdt. dated February 24, 2006

Reply to Office Action of October 26, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) ~~An apparatus~~ A Private Branch Exchange (PBX) apparatus for transmitting and receiving CID (Caller ID) ~~in a PBX, the apparatus~~ comprising:
 - an Analog Trunk Convergency (ATC) unit for converging with an exchange in the PBX connected to the exchange;
 - a Subscriber Line Convergency (SLC) unit for transmitting CID and/or data by converging with a subscriber line connected to each port;
 - a control block for controlling a CID service for the analog trunk and the subscriber line units;
 - a data path control block for controlling data transmission through a data path between the ATC unit and the SLC unit;
 - a CID service unit, the CID service unit including a CID and signal detecting unit and a CID and signal transmitting unit that each perform digital signal processing on the CIDs and signals;
 - a signal transmitting/detecting block for performing signal transmitting and/or detecting through the data path; and

a switching block for connecting the data path between a ~~CID~~the CID service unit, ~~the CID service unit providing CIDs and/or system tones through a digital signal process,~~ and the ATC unit and ~~the SLC units~~unit, and for selectively switching the data path between the signal transmitting/detecting block and the CID service unit.

2. (Original) The apparatus according to claim 1, wherein the ATC unit comprises:

a plurality of ports, each port comprising a converting block for converting the CID received from a public exchange through a subscriber line or office line into analog data and transmitting the data to the switching block through a highway as a data path, a ring detecting block for detecting a ring signal received from the public exchange through the subscriber line, and a holding line for establishing and holding the subscriber line; and

a local detecting block connected to the ports, for controlling CID transmission through a system path.

3. (Original) The apparatus according to claim 1, wherein the SLC unit comprises:

a plurality of ports, each of the ports comprising: a converting block for converting the CID transmitted through the switching block into a digital signal, a ring transmitting block for transmitting a ring to an affected receiver terminal in response to a ring transmission message from the local control block, and an off-hook detecting block for

detecting off-hook status of the affected terminal of a receiver; and

a local control block for controlling the transmission of the CID transmitted through a system bus.

4. (Currently amended) An apparatus in a Private Branch Exchange (PBX) for transmitting and receiving a Caller ID (CID) ~~in a Private Branch Exchange (PBX), to detect the CID or a system signal for a transmitted or received call at an Analog Trunk Convergence (ATC) unit and a Subscriber Line Convergence (SLC) unit and to transmit the detected data or signal to a receiver terminal, the apparatus comprising:~~

a CID detecting block for detecting ~~the signal~~ a system signal and/or ~~the CID~~ a CID received through a highway as a data path connected by a switching block, and storing the signal and/or the CID in a corresponding area per port inside a CID detection memory block;

a CID transmitting block for transmitting the CID to an affected receiver terminal through the highway as the data path;

a CID detection memory for assigning a memory area to each of subscriber ports of the SLC unit and storing the signal and/or the CID for a corresponding port;

a CID transmitting memory for storing a system signal and/or a CID in each port, in order to transmit a predetermined CID to an affected receiver terminal when a ring signal is transmitted to the affected receiver terminal; and

a local control block for controlling CID transmission to a corresponding port in a Subscriber Line Convergency (SLC) ~~the SLC~~ unit through a system bus by reading the signal and/or the CID of each port from the CID detection ~~memory~~memory.

wherein the apparatus detects the CID or the system signal for a transmitted or received call at an Analog Trunk Convergency (ATC) unit and the SLC unit in the PBX and transmits the detected CID or signal to a receiver terminal.

5. (Original) The apparatus according to claim 4, wherein the CID detecting block comprises:

a highway convergency block for receiving the signal and/or the CID by converging with the data path connected by the switching block;

a CID detecting block for detecting the CID received from the highway convergency block;

a system signal detecting block for detecting a system signal transmitted to the highway convergency block; and

a memory interface block for interfacing with the CID detection memory, to store the CID detected by the CID detecting block and the signal detected by the system signal detecting block in a predetermined memory area of a corresponding port.

6. (Original) The apparatus according to claim 4, wherein the CID transmitting block comprises:

a memory interface block for interfacing CID that is transmitted from the CID transmitting memory;

a CID transmitting block for transmitting the CID from the CID transmitting memory to a highway convergency block, in order to transmit the CID to the switching block;

a system signal transmitting block for transmitting the system signal received from the CID transmitting memory; and

a highway convergency block for transmitting the signal and/or the CID by converging with the highway as the data path connected to the switching block.

7. (Currently amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

establishing a line with the PBX through a general switched telephone network;

converting a CID received ~~data~~ through the line, and storing the ~~data~~ CID through a switching block in a CID service unit ~~at the PBX comprised of~~ that includes at least one memory; and

transmitting all or part of the stored CID to a terminal, through the switching block and/or a Subscriber Line Convergency (SLC) block and display the CID on the terminal.

8. (Currently amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

storing CIDs in a first memory in a CID service unit at the PBX;

storing preassigned CIDs for transmission out of the stored CIDs ~~for transmission~~ in a second memory in the CID service unit; and

transmitting the preassigned CIDs stored in the second memory to a caller ID terminal through a switching block and/or a Subscriber Line Convergency (SLC) unit.

9. (Currently amended) The method according to claim 8, wherein the first memory comprises the CIDs are stored in a caller detection memory ~~which is the first memory of the CID service block~~ unit.

10. (Currently amended) The method according to claim 8, wherein a system control block stores the preassigned CIDs out of the stored CIDs ~~for transmission in the second memory through a control unit of the CID service unit, the second memory comprising a CID transmitting memory which is the second memory, through a control block of a CID service unit.~~

11. (Currently amended) The method according to claim 8, wherein the storing CIDs

in the first memory comprises:

receiving a ring from a public exchange to an Analog Trunk Convergence (ATC)

unit in a PBX;

detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, to a system control block through a system bus regarding the reception of the ring;

if receiving the ring is reported, connecting, at the system control block in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service unit through a switching block;

detecting, at a CID detecting block, the CID through a highway convergence block based on a predetermined signal; and

storing the detected CID in a predetermined area per port in a CID detection memory, through a memory interface block.

12. (Original) The method according to claim 8, wherein storing prearranged CIDs for transmission in the second memory comprises:

if receiving the call is reported from the Analog Trunk Convergence (ATC) unit, transmitting, at a system control block, a ring transmission message to a local control block in a Subscriber Line Convergence (SLC) unit using a system bus through a system bus control block,

and simultaneously, transmitting a system signal and/or a caller ID message; and

if the local control block receives at least one of the ring transmission message, the system signal, and the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory.

13. (Original) The method according to claim 8, further comprising:

displaying the transmitted CIDs on the caller ID terminal.

14. (Currently amended) A method for transmitting and receiving a Caller ID (CID) in a Private Branch Exchange (PBX), the method comprising:

receiving a ring from a public exchange to an Analog Trunk Convergency (ATC) unit in a PBX;

detecting, at a ring detecting block, whether the ring is received, and reporting, at a local control block, the reception of the ring to a system control block through a system bus;

if receiving the ~~call~~ring is reported, connecting, at the system control block in the PBX, a highway as a data path of a corresponding port to a highway of a Caller ID (CID) service block at the PBX through a switching block;

detecting, at a CID detecting block, the CID through a highway convergency block based on a predetermined signal;

storing the detected CID in a predetermined area per port in a CID detection memory of the CID service block, through a memory interface block

if receiving the ~~call~~ring is reported from the ATC unit, transmitting, at a system control block, a ring transmission message to a local control block in a Subscriber Line Convergence (SLC) unit using a system bus through a system bus control block, and simultaneously, transmitting a system signal and/or a caller ID message;

if the local control block receives at least one of the ring transmission message, the system signal, ~~and or~~ the caller ID message, transmitting, at the local control block, the signal and/or storing the system signal and the caller ID in a caller ID transmitting memory in the CID service block;

reading, at a system control block, the system signal and/or the CID stored in the CID transmitting memory, and transmitting the CID to the SLC unit through a switching block and a system bus; and

if the local control block in the SLC unit provides the CID to a corresponding port, transmitting the CID through a subscriber line and displaying the CID on a caller ID phone at a subscriber side.

15. (Currently amended) A ~~communication system~~ CID service unit in a PBX comprising:

a first memory ~~in a network exchange~~ configured to receive and store a Caller ID (CID);

a second memory configured to store preassigned CIDs out of the stored CIDs for transmission; and

a switching block configured to transmit the CIDs stored in the second memory to a caller ID terminal.

16. (Original) The communication system of claim 15, further comprising:

a Subscriber Line Convergency (SLC) unit configured to receive the CIDs from the switching block and to route the CIDs to the caller ID terminal.

17. (Original) The communication system of claim 15, wherein the first memory is a caller detection memory of a CID service block.

18. (Original) The communication system of claim 15, wherein the second memory is a CID transmitting memory.

19. (Original) The communication system of claim 18, further comprising:

a system control block configured to store the preassigned for transmission in the CID transmitting memory, through a control block of a CID service unit.

20. (Original) The communication system of claim 15, further comprising:

an Analog Trunk Convergency (ATC) unit configured to receive a ring from a public exchange;

a ring detecting block configured to detect whether the ring is received, and to report the reception of the ring;

a system control block in the network exchange, configured to connect a data path of a corresponding port to a Caller ID (CID) service unit through a switching block, if the ring is reported as received;

a CID detecting block configured to detect the CID through a highway convergency block based on a predetermined signal; and

a memory interface block configured to store the detected CID in a predetermined area per port in a CID detection memory.

21. (Original) The communication system of claim 15, further comprising:

a system control block configured to transmit a ring transmission message to a local control block in a Subscriber Line Convergency (SLC) unit, and to transmit a system

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signal and/or a caller ID message, if the call is reported from an Analog Trunk Convergency (ATC) unit as received; and

wherein the second memory is configured to store a system signal and/or caller ID, if the local control block receives at least one of the ring transmission message, the system signal and caller ID.

22. (Original) The communication system of claim 15, wherein the system control block is configured to transmit the ring transmission message and to transmit the system signal simultaneously.

23. (Original) The communication system of claim 15, wherein the network exchange is a Private Branch Exchange (PBX).

24. (Original) The communication system of claim 15, wherein the caller ID terminal is a phone configured to display the CID.